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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,841	01/26/2007	Shinji Yasuhara	291014US3PCT	3757
22850 7590 05/28/2009 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER				
ALTUN, NURI B				
ART UNIT		PAPER NUMBER		
3657				
NOTIFICATION DATE		DELIVERY MODE		
05/28/2009		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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# Office Action Summary

**Application No.**

10/578,841

**Applicant(s)**

YASUHARA ET AL.

**Examiner**

NURI ALTUN

**Art Unit**

3657

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

Amendment received on 1/26/09 has been acknowledged. Claims 1, 4, 7, 10 and 11 have been amended. Claims 12-16 have been cancelled.

#### ***Claim Objections***

Claim objection has been overcome.

#### ***Claim Rejections - 35 USC § 112***

Claim rejection under 35 USC 112 2<sup>nd</sup> paragraph has been overcome.

#### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims **1-4 and 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Van Rooij et al. (5,728,021)**, in view of **Sakamoto et al. (6,969,332)**.

**As per claims 1 and 2**, Van Rooij et al. teach a power transmission chain (see title) including;

a plurality of links (33)

having front (35) and back insertion parts (37)

into which pins (45) are inserted (col.4, lines 13-14);

and a plurality of first pins (45) and a plurality of second pins (47)

for connecting the links aligned in a chain width direction so as to be bendable in a longitudinal direction (col.4, lines 11-13, lines 26-29)

such that a front insertion part of one link and a back insertion part of another link correspond to each other (col.4, lines 9-13)

in which a first pin fixed to a front insertion part of one link and movably fitted in a back insertion part of another link and a second pin movably fitted in the front insertion part of the one link and fixed to the back insertion part of the other link move relatively in a rolling contacting manner so as to enable bending in a longitudinal direction between the links (col.4, lines 14-21),

wherein the pins are fixed to the front and back insertion parts by fitting by mechanical press-in (col.4, lines 21-22) (Claims 1 and 2),

However, Van Rooij et al. fail to teach at least one of the following conditions being satisfied;

a difference in dimension between the pins and the front and back insertion parts is 0.005 mm to 0.1 mm.

a maximum tensile stress in a periphery of the insertion part after fitting is not more than 1000 Mpa;

and stress in the periphery of the insertion part after fitting is 3 to 80% of an elastic limit.

Sakamoto et al. teach a silent chain having the condition that a difference in dimension (press-in margin) is approximately 0.2 mm (col.3 lines 64-65, col.6 line 17, and col.6 lines 19-20) (Claims 1 and 2).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the transmission chain of Van Rooij et al. to include the difference dimension taught by Sakamoto et al. in order to provide better fitting of the parts and expect them to have the same outcome because the ranges are sufficiently close to each other. Further, although ranges do not overlap, a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties (*See MPEP 2144.05 I*).

Further it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the chain to have the condition that a difference in dimension (press-in margin) to be approximately .005-.1 mm in order to optimize link strength. *MPEP 2144.05 II A* states that it is not inventive to discover the optimum or workable ranges by routine experimentation.

**As per claims 3 and 4**, Van Rooij et al. teach the fitting being performed by mechanical press-in (col.4, lines 21-22) (Claims 3 and 4), but fail to teach the maximum tensile stress in the periphery of the insertion part after press-in being not more than 1000 MPa (Claim 3) and the stress in the periphery of the insertion part after press-in being 3 to 80% of the elastic limit (Claim 4).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the chain having the maximum tensile stress in the periphery of the insertion part after press-in being not more than 1000 MPa (Claim 3) and the stress in the periphery of the insertion part after press-in to be in 3 to 80% of the

elastic limit (Claim 4) in order to optimize the link strength. Further, *MPEP 2144.05 II A* states that it is not inventive to discover the optimum or workable ranges by routine experimentation.

**As per claim 11**, Van Rooij et al. teach a power transmission device comprising;  
a first pulley including a sheave face in a conical surface shape;  
a second pulley including a sheave face in a conical surface shape;  
and a power transmission chain provided over the first pulley and the second pulley,

wherein the power transmission chain is according to any one of claims 1 to 10 (col.4, lines 37-45).

3. Claims **5-7** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Van Rooij et al. (5,728,021)**, in view of **Mercier (2,844,042)**, and further in view of **Sakamoto et al. (6,969,332)**.

**As per claim 5**, Van Rooij et al. teach all structural elements of the claimed invention, as mentioned above, but fail to explicitly disclose fitting being performed by shrink-fitting and a difference in dimension between the pin and the insertion part before starting shrink-fitting being 0.005 mm to 0.1 mm..

Mercier teaches a chain having the concept of fitting being performed by shrink-fitting (col.3 lines 51-59),

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the chain of Van Rooij et al. to include fixing of pins taught by Mercier in order to have a firmer connection between parts.

The Van Rooij et al. and Mercier combination teaches all the structural elements of the claimed invention, as mentioned above, but fails to teach a difference in dimension between the pin and the insertion part before starting shrink-fitting being 0.005 mm to 0.1 mm.

Sakamoto et al. teach a silent chain having a margin between pin and insertion part before fitting being approximately 0.2 mm (col.3 lines 64-64, col.6 line 17, col.6 lines 19-20).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of Van Rooij et al. and Mercier to include the difference dimension taught by Sakamoto et al. in order to provide better fitting of the parts.

Further it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the chain to have the margin between pin and insertion part before fitting to be approximately 0.005-.1 mm in order to optimize link strength. *MPEP 2144.05* II A states that it is not inventive to discover the optimum or workable ranges by routine experimentation.

**As per claims 6 and 7,** The Van Rooij et al. and Mercier combination teaches all the structural elements of the claimed invention, as mentioned above, but fails to teach the maximum tensile stress in the periphery of the insertion part after completing shrink-fitting being not more than 1000 MPa (Claim 6) and the stress in the periphery of the insertion part after completing shrink-fitting being 3 to 80% of the elastic limit (Claim 7).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the chain having the maximum tensile stress in the periphery of the insertion part after shrink-fitting being not more than 1000 MPa (Claim 6) and the stress in the periphery of the insertion part after shrink-fitting to be in 3 to 80% of the elastic limit (Claim 7) in order to optimize the link strength.

4. Claims **8-10** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Van Rooij et al. (5,728,021)**, in view of **Forster et al. (6,006,514)**, and further in view of **Sakamoto et al. (6,969,332)**.

As per claim 8, Van Rooij et al. teach all structural elements of the claimed invention, as mentioned above, but fail to explicitly disclose the fitting being performed by cool-fitting, and a difference in dimension between the pin and the insertion part before starting the cool-fitting is 0.005 mm to 0.1 mm.

Forster et al. teach a link-shape and chain link assembly method with the concept of fitting being performed by cool-fitting (col.5, lines 9-11).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the chain of Van Rooij et al. to include fitting method taught by Forster et al. in order to provide more efficient structural integrity.

The Van Rooij et al. and Forster et al. combination teaches all the structural elements of the claimed invention, as mentioned above, but fails to teach a difference in dimension between the pin and the insertion part before starting the cool-fitting is 0.005 mm to 0.1 mm.



Sakamoto et al. teach a silent chain having a dimension margin between pin and insertion part before fitting being approximately 0.2 mm (col.3 lines 64-64, col.6 line 17, col.6 lines 19-20).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the combination of Van Rooij et al. and Forster et al. to include the difference dimension taught by Sakamoto et al. in order to provide better fitting of the parts.

Further it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the chain to have a dimension margin between pin and insertion part before fitting being approximately .005-.1 mm in order to optimize link strength. *MPEP 2144.05 II A* states that it is not inventive to discover the optimum or workable ranges by routine experimentation.

**As per claims 9 and 10**, The Van Rooij et al. and Mercier combination teaches all the structural elements of the claimed invention, as mentioned above, but fails to teach the maximum tensile stress in the periphery of the insertion part after completing cool-fitting being not more than 1000 MPa (Claim 9) and the stress in the periphery of the insertion part after completing cool-fitting being 3 to 80% of the elastic limit (Claim 10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the chain having the maximum tensile stress in the periphery of the insertion part after completing cool-fitting being not more than 1000 MPa (Claim 9) and the stress in the periphery of the insertion part after completing cool-

fitting to be in 3 to 80% of the elastic limit (Claim 10) in order to optimize the link strength.

***Response to Arguments***

Applicant's arguments filed on 01/26/2009 have been fully considered but they are not persuasive.

The applicants argue that, "the Office Action fails to set forth a prima facie case of obviousness on this basis, both because the clearance taught in Sakamoto et al. is not close to claimed range, it is at least twice the maximum value of the claimed range and because no evidence has been proffered tending to show that one skilled in the art would have expected Sakamoto et al. to have the same properties if the disclosed clearance were reduced by more than one half. Indeed, Sakamoto et al. teach the opposite; that it is preferable that the clearance be even greater than 0.2 mm." Sakamoto et al. teach a difference in dimension being approximately 0.2 mm, which is only 0.1 mm higher than the claimed range, which can be reasonably considered as being close to the claimed range. It is noted that Sakamoto et al. reference is relied on for teaching the claimed dimension difference. The structural properties are taught by the Van Rooij et al. reference. Therefore it would not change the properties of the combination if the value taught by Sakamoto et al. is modified. Further, Sakamoto et al. prefers the clearance be greater than 0.2 mm only in the case of a chain with a pitch greater than 6.35 mm (col.6, lines 20-22). Therefore, this does not preclude modifying Sakamoto et al. for other pitch values.

Applicants next argue, "it was applicants who discovered that the claimed fitting conditions are result effective parameters for improving the strength and reliability of power transmission in the link, and so this failure of the prior art cannot be simply dismissed as the result of the routine experimentation." It is noted that Sakamoto et al. teach the clearance is approximately 0.2 mm, and it is preferably greater than 0.2 mm in the case of a chain with a pitch greater than 6.35mm (col.6, lines 19-22). Therefore, as the pitch increases, the clearance increases; and accordingly, as the pitch decreases so does the clearance. Since the clearance taught by Sakamoto et al. can change depending on the pitch, it is considered as a result effective parameter for improving the strength of transmission in the link (see col.6, lines 23-28).

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NURI ALTUN whose telephone number is (571)270-5807. The examiner can normally be reached on Mon-Fri 7:30 - 5:00 with first Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Siconolfi can be reached on (571) 272 7124. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Bradley T King/  
Primary Examiner, Art Unit 3657

NBA